NHMFL

FLORIDA STATE UNIVERSITY

SAFETY PROCEDURE

SP-23

TITLE: PERSONAL PROTECTIVE EQUIPMENT

1.0 PURPOSE

1.1 This procedure establishes policy and procedures to be observed by all personnel at the NHMFL when assigned to work tasks requiring the use of personal protective equipment (PPE). **NOTE**: Personal protective equipment shall only be used when engineering and administrative controls are not feasible, or do not provide a level of protection which ensures the safety and health of the employee, user, guest, or contractor.

1.2 The policy of the NHMFL is to provide and maintain a safe and healthful working environment. The safety and health of all employees, users, guests, and contractors is the inherent responsibility of the NHMFL.

2.0 SCOPE

2.1 This document assigns responsibilities, provides safety guidance, and defines actions to be taken to protect personnel from workplace hazards through the use of personal protective equipment.

3.0 RESPONSIBILITIES

3.1 The Program Administrator shall be the NHMFL Environmental Health and Safety Office which has the responsibility to review this procedure for effectiveness and verify the use of PPE by NHMFL personnel in accordance with this procedure.

3.2 Supervisors shall inform workers of the PPE necessary for the specific tasks assigned and shall ensure the workers receive the training required as outlined in this procedure. Supervisors shall monitor workers and counsel those not following the guidelines of this procedure.

3.3 Employees shall properly don, wear, remove, clean and inspect all PPE. Employees shall consult this procedure for determining PPE requirements.

4.0 SPECIFIC PERSONAL PROTECTIVE EQUIPMENT

This section describes the specific personal protective equipment required for work operations at the NHMFL. Selection of PPE shall be based on a job safety analysis of the work to be performed. The NHMFL Safety Office will conduct job safety analysis and assist in selecting the proper PPE.

4.1 Head Protection

Employees shall wear protective hard hats when working in areas where there is an immediate hazard for injury to the head from falling objects, bumping hazards, or general overhead hazards; i.e., piping, low clearances. All head protection is designed to provide protection from impact and penetration hazards caused by falling objects. The shell of the hard hat is designed to absorb some of the impact, while the suspension is designed to absorb most of the impact. Proper adjustment is critical for maximum protection of the wearer. Hardhats shall comply with ANSI Z89.1-1989 (29 CFR 1910.135).

Specific work tasks requiring the use of a hard hat include, but are not limited to personnel operating an overhead crane, confined space entry work, when working at an elevated height, or when working below people working at elevated heights.

4.2 Eye and Face Protection

The following shall be used to assist in the selection of eye and face protection:

4.2.1 Employees shall use the appropriate eye or face protection when working directly with liquid chemicals, acids, caustic liquids, chemical gases or vapors, cryogenic liquids, potentially injurious light radiation, welding, and flying objects. Appropriate eyewear may consist of safety glasses with rigid sideshields, chemical goggles, face shields, laser protective eyewear, welding glasses and goggles, and full face respirators. The selection and use of eye protection shall be based on the identified hazards. Contact the Safety Office for a job safety analysis or for assistance in selecting the proper protective eyewear.

4.2.2 Protective eye and face equipment shall comply with ANSI Z87.1-1989. "Z87" shall be stamped somewhere on the frame indicating conformance with this standard.

4.2.3 Eye protection shall be worn in areas identified as containing the potential for eye injury and when performing work tasks with potential eye hazards.

4.2.4 Prescription safety glasses shall be provided to employees assigned to work in potentially hazardous locations. The glasses shall be provided at no cost to the employee. Contact the Safety Office for information on the prescription eyewear program.

4.2.5 Welding operations shall conform with the requirements of 29 CFR 1910.252(e).

4.2.6 Personnel wearing contact lenses shall exercise extreme care when working with liquid chemicals, gases or vapors. Eye protection shall be selected using the same criteria for non-contact wearing personnel. Non-gas permeable contact lenses shall not be worn in these types of operations due to the increased risk of eye injury in the event of an exposure to a chemical. If you wear these types of contact lenses, contact the Safety Office prior to performing any of these operations.

4.2.7 The selection of protective eyewear for laser users shall be based on ANSI Z136.1-1993. Consideration for optical density, laser medium, wavelengths and power output shall be reviewed. Contact the Safety Office for assistance in selecting this type of protective equipment.

4.3 Hand Protection

4.3.1 Employees will use appropriate hand protection when hands are exposed to potential hazards such as those from the skin absorption of harmful substances, contact with acids or caustics, severe cuts or lacerations, abrasions, punctures, electrical, chemical burns, thermal burns and harmful temperature extremes.

4.3.2 There is no single glove which provides protection against all potential hand hazards, and commonly available glove materials provide only limited protection against many chemical and physical hazards.

4.3.3 It is important to select the most appropriate glove for a particular application and to determine how long it can be worn effectively. Consider work activities, degree of dexterity required, duration, frequency, and degree of exposure, physical stresses, and toxic properties of chemicals.

4.3.4 Glove materials used for protective purposes at the NHMFL may include natural rubber (latex), nitrile, neoprene, PVC, butyl rubber, leather, cotton, and thermal gloves.

4.3.5 When working with liquid hazardous chemicals, gloves such as rubber, nitrile, neoprene, PVC, butyl rubber shall be selected based on permeability, toxicity, and corrosivity of the material. Contact the Safety Office for information on permeability glove selection.

The following is a generic guideline for the selection of gloves. Always contact the Safety Office or chemical manufacturer for assistance in selecting gloves.

Material	**Generally Recommended**	**Not Recommended**
Natural rubber (latex)	alcohols, caustics, ketones, many acids	aromatics, hydrocarbons, solvents(chlorinated)
Nitrile	many acids, alcohols, caustics, hydrocarbons	ketones, hydrocarbons, strong acids
Neoprene	organic acids, caustics, alcohols, petroleum solvents	solvents (aromatic, chlorinated)
PVC	alcohols, caustics, hydrocarbons	solvents (aromatic, chlorinated), aldehydes
Butyl rubber	acids, ketones, esters, bases, alcohols, aldehydes, electrical work	hydrocarbons (halogenated or aromatic)

Leather	protection against cuts, abrasions, temperature extremes, can be worn over butyl rubber gloves for electrical work for puncture protection	liquid hazardous chemicals, electrical work, when operating machinery

4.3.6 Leather or cotton gloves shall be worn when there is a potential for injury from being struck against, caught between, cut, and materials handling. Leather and cotton gloves shall not be worn for protection from liquid hazardous materials.

4.3.7 Gloves designed to protect from temperature extremes shall be worn when handling and transferring cryogenic gases and liquids, and when operating high temperature equipment such as furnaces and ovens. Gloves may be specially designed cryogenic gloves, leather, or other suitable materials with proper insulating properties.

4.3.8 Electricians shall wear UL approved insulated rubber gloves when working with high-voltage equipment. These gloves may be worn under eathergloves to prevent punctures. A daily visual inspection must be performed. Make sure the rubber gloves extend well above the wrist so that there is no gap between the coat or shirt sleeve and glove.

4.3.9 Gloves should not be worn when operating equipment such as drill presses, lathes, or other equipment with rotating parts. In these instances, the gloves may be entangled in the moving parts causing severe injury to the operator.

4.4 Chemical Protective Clothing

A large variety of clothing types and materials are available for use in the protection of the body from the hazards of chemicals and work conditions. Proper selection is based on the type of chemical or work task to be encountered. The NHMFL Safety Office will assist in the proper selection of chemical protective clothing (CPC).

4.4.1 Coveralls provide total body protection from potential exposure to hazards. There are many types of materials available based on the hazards involved. Coveralls should be worn when there is an immediate danger from exposure to the hazard involved.

4.4.2 Splash suits and aprons are available for protection against the hazards from liquid materials where there is a lesser degree of danger from exposure to the material.

4.4.3 Lab coats should be worn in all laboratories where hazardous chemicals or processes are present. Lab coats provide protection to the individual from minimal exposures to hazardous materials. Lab coats should be removed before leaving the area and stored in a location to keep them clean. Lab coats should be commercially laundered.

4.4.4 All CPC shall be removed before leaving the assigned work area. Disposable CPC shall be properly disposed of in accordance with NHMFL policy. Non-disposable or re-usable CPC is to be stored in the designated work area.

4.5 Foot Protection

4.5.1 Personnel shall wear adequate foot protection, as prescribed below, when working in areas where there is the danger of foot injuries due to falling or rolling objects, objects piercing the sole, and where such employee's feet are exposed to electrical hazards.

4.5.2 Protective footwear shall comply with ANSI Standard Z41-1991 and 29 CFR Part 1910.136. The Safety Office can provide information on the proper selection and purchasing of protective footwear for NHMFL employees. Safety shoes with steel toes will be supplied at no cost to the employee. Slip on type steel-toed guards are available for non-maintenance personnel, including users, guests, and contractors, performing work requiring their use. Caution should be taken when wearing steel-toed safety shoes in the vicinity of high magnetic fields.

4.5.3 Rubber or neoprene boots may be required for certain work operations (i.e., tank clean-outs, pressure washing, confined space entry, and emergency response operations).

4.5.4 Open-toed sandals or shoes shall not be worn into any area where there is a potential for foot injury. Office and administrative personnel not at risk to potential foot injury are excepted from these requirements.

4.6 Hearing protection is required in areas where the sound levels exceed an 8-hour time-weighted average of 85 decibels (dB). These areas shall be posted and hearing protective devices shall be readily available for use by all personnel. Hearing protective devices include ear plugs and muffs. The OPMD Central Utilities Plant requires the use of hearing protection at all times. Other areas may fall under the requirements of this section due to equipment or processes operating in the area. See the NHMFL Safety Procedure, *Hearing Conservation*, for the written details of the program.

4.7 Body Protection

4.7.1 Harnesses and fall restraint equipment shall be worn when working at heights of six (6) feet or more above the working surface. A fall-arrest type lanyard shall be utilized in conjunction with the harness to reduce the impact load on the person and the equipment.

4.7.2 Lifelines are necessary in certain types of work such as confined space entry or when working in trenches or excavations.

4.7.3 Personnel working with ionizing radiation shall wear film badges attached to their clothing or ring badges worn on the finger. These are provided by the FSU Radiation Safety Office and are developed and replaced on a monthly basis. Contact the NHMFL Safety Office if you work with radioactive isotopes, x-ray spectrometers, or other ionizing radiation producing equipment.

4.8 Respiratory protective devices shall be worn when the use of engineering controls (fume hoods, ventilation, isolation) do not reduce the contaminant levels below the established permissible exposure limits (PEL), and in emergency response actions. Anyone required to wear respiratory protective equipment shall be trained in the use and limitations of the devices in accordance with the NHMFL Safety Procedure, *Respiratory Protection.*.

4.8.1 Respiratory protective devices include disposable dust masks, air purifying respirators, and air supplying respirators. Emergency self-contained breathing apparatus are located in the OPMD Building for use in emergency response situations.

5.0 MAINTENANCE PROCEDURES

Personal protective equipment requires proper cleaning, decontamination, inspection, repair, replacement, and storage.

5.1 Head Protection

5.1.1 Cleaning and decontamination includes the washing of the equipment with a mild detergent or bleach solution to prevent the spread of head lice, mites, etc. This should be performed after use prior to returning to storage.

5.1.2 Inspections shall be done prior to each use. Check for proper fit. Insure that there are no cracks, dents, or gouges in the hat. Check all inner fitting straps and adjusting devices. Inspect the hat for signs of contamination or degradation due to exposure to chemicals.

5.1.3 Repairs shall be made to any defective equipment before use. If repairs can not be made, replace that piece of equipment with an approved device.

5.1.4 Store in a clean area away from direct exposure to sunlight or chemicals.

5.2 Hand Protection

5.2.1 Cleaning and decontamination of gloves is normally accomplished by discarding after use. Leather and thermal protection gloves should be re-used and properly stored after use.

5.2.2 Inspect gloves before each use. Check for holes, tears, cracks, seams or other damage. Do not use damaged gloves.

5.2.3 Store gloves in a clean, dry storage area.

5.3 Chemical Protective Clothing

5.3.1 Most CPC is disposable and should be discarded after use. Non-disposable CPC shall be decontaminated after each use if needed. Lab coats and other CPC should be laundered by a commercial laundry. Contact the Safety Office to arrange to have CPC laundered.

5.3.2 Inspect prior to each use. Check for tears, holes, signs of degradation, and defects. Discard defective equipment.

5.3.3 Store CPC in a clean, dry and accessible location.

5.4 Foot Protection

5.4.1 Inspect foot protection monthly. Check for tears, holes, and other defects. Report defects to the Safety Office. Employees may purchase a new pair of safety shoes with the approval of their supervisor and the Safety Office.

5.5 Hearing protective devices are commonly of two types: plugs and muffs. Plugs are designed to be disposable after use. Be careful when inserting into the ear canal that the fingers used to insert the plug, and the plugs, are clean and free of dirt and debris. Be sure not to insert the plug too far into the ear canal. Muffs should be inspected for dirt and debris before use. Check the integrity of the foam or padding in the muff. Proper adjustment is necessary to obtain the maximum protection.

5.6 Body protection equipment, including, harnesses, lanyards, and lifelines shall be inspected for damage before and after each use. Check for damage to the straps, cloth, rope, buckles and snaps on the equipment. Do not use damaged equipment.

5.7 Respiratory protection equipment shall be inspected before and after each use. Check the facepiece, lens, valves, filters, gaskets, adjusting straps, and buckles for defects, damage, or missing parts. If an air-purifying respirator is selected, check that the proper cartridge or filter is installed. Check the seal of the facepiece by performing negative and positive pressure fit-checks. Refer to NHMFL Safety Procedure, *Respiratory Protection* for more details.

6.0 PURCHASING PROCEDURES

All personal protective equipment should be approved by the NHMFL Safety Office prior to purchasing. The Safety Office has contacts with several vendors and can obtain special pricing on most items. Contact the Safety Office for assistance.

7.0 TRAINING REQUIREMENTS

7.1 All employees required to wear personal protective equipment shall be properly trained. Training shall include classroom sessions, computer-based tutorials, and practical exercises in:

7.1.1 Proper selection, use and maintenance of the equipment, including capabilities and limitations.

7.1.2 The nature of the potential hazards and the consequences of not using the appropriate equipment.

7.1.3 Procedures for inspection, donning, checking and fitting of the equipment.

7.1.4 Applicable emergency procedures in the event of equipment failures.

7.2 Prior to initial assignment, and annually thereafter, employees shall receive training in the proper use of PPE. Re-training shall also be required in the event of job re-classification, changes to equipment and systems, or when a review indicates inadequacies in the administration or effectiveness of this procedure.

7.3 Training is documented and maintained by the NHMFL Safety Office. In addition to this training, many job specific courses offered by the NHMFL provide training in areas such as heat stress, confined space entry, burning and welding safety, cryogenic safety, etc. All employees shall have the opportunity to don and use the PPE in a safe environment before use in actual work situations.

7.4 The failure to follow this established Safety Procedure may result in disciplinary actions. The employee's direct supervisor or the Safety Office will be responsible for enforcing and administering the actions.The actions will be based on a review of the incident and the severity of the potential hazard(s) involved. The disciplinary actions may include:

7.4.1 First occurrence: oral reprimand to three (3) day suspension

7.4.2 Second occurrence: written reprimand to three (3) day suspension

7.4.3 Third occurrence: dismissal

8.0 REFERENCES

Code of Federal Regulations Title 29, Subpart I, *Personal Protective Equipment,* May, 1995

Supervisor's Safety Manual, National Safety Council, Eighth Edition, 1993